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EFFECTIVENESS OF BLACK BEAR CROSSINGS ON I-26 IN MADISON COUNTY, NORTH CAROLINA

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Abstract

Roads have become an integral part of our society, but recently society has begun to realize the ecological impact that roads have on their surroundings. One major effect that roads have on large mammals is creating a barrier to movement of individuals both between and within populations. In an effort to alleviate this problem on a new interstate project, the North Carolina Department of Transportation constructed two 8' x 8' concrete box culverts on I-26 in Madison County, North Carolina, intended for use by American Black Bears (*Ursus americanus*). Black bears have been observed using a variety of crossing structures, and it is not known what type of design best suits their needs. To determine the effectiveness of these crossing structures, each culvert's wildlife activity is being recorded by Cuddeback digital still cameras. In addition, digital video data is being captured at one of the culverts. One crossing has been monitored since November 2005, the other since April 2006. From these data, detection probabilities and an overall estimate of wildlife use can be calculated. Wildlife crossings at other structures along the roadway will also be recorded, specifically at culverts built to carry trout streams under the interstate. Also, still cameras have been installed at a few likely crossing locations along the roadway in an attempt to capture black bear crossings. These potential crossings were selected based on the literature. Lastly, local residents are being surveyed to determine locations black bears have been seen crossing the interstate. Based on the various types of crossing data, and information from the literature, a GIS model will be constructed to predict where black bears are most likely to cross roads in the Appalachian Mountains.

At this time, no black bears have been recorded using either of the crossings, or any of the stream culverts. Bears have been recorded crossing the roadway adjacent to the crossing structure, and one bear was recorded at the entrance to the crossing structure. Several other mammal species have been recorded using the wildlife crossings, including raccoons, opossums, bobcats, groundhogs, a least weasel, a species of rat, and domestic cats. The crossings will continue to be monitored through early summer 2007. At that time, the crossings will be evaluated for effectiveness as black bear crossings, and the GIS model will be finalized.

Based on the results, transportation officials around the world will have a better understanding of how black bears, and possibly other large carnivores, interact with roads of this size.